

**WESTERN AREA POWER ADMINISTRATION
HYDRO CONDITIONS AND PURCHASE POWER REPORT
January 2017**

Agency-wide

	Generation (Megawatt-Hours [MWh])				Purchase Power (MWh)	Purchase Power Expenses (Dollars)		
	Projected <u>Dry</u>	Most <u>Probable</u>	<u>Average</u>	<u>Actual</u>	<u>Actual</u>	Projected <u>Dry</u>	Most <u>Probable</u>	<u>Actual</u>
Oct 16	1,315,017	1,426,426	1,875,967	1,428,673	337,634	\$14,667,625	\$9,521,646	\$8,354,594
Nov 16	1,383,358	1,355,599	1,760,441	1,390,468	455,186	\$16,259,488	\$12,897,315	\$10,410,259
Dec 16	1,328,808	1,461,830	1,702,288	1,592,646				
Jan 17								
Feb 17								
Mar 17								
Apr 17								
May 17								
Jun 17								
Jul 17								
Aug 17								
Sep 17								
Total	4,027,183	4,243,855	5,338,696	4,411,788	792,820	\$30,927,113	\$22,418,961	\$18,764,853
	Actual generation as a percentage of average: 82.6%					Cost per MWh: \$23.67		

Western Area Power Administration (WAPA) generated a total of 4,412 gigawatt-hours (GWh) during October through December of fiscal year 2017, or 82.6 percent of the average. Actual purchase power data is currently available from October through November for all of WAPA's Regions, and during this period total purchase power was 793 GWh and total purchase power expenses were \$18,764,853, which equates to \$23.67 per MWh.

The following pages indicate WAPA's Regional snowpack, lake/reservoir inflow and content, generation, and purchase power expenses, among other things. Snowpack is reported as snow water equivalent, which is the depth of water that theoretically would result if the entire snowpack is melted instantaneously.

Colorado River Storage Project

	Snowpack (Inches in Snow Water Equivalent)		Lake/Reservoir Inflow (Thousand Acre-Feet)		Lake/Reservoir Content (Million Acre-Feet)		Generation (MWh)				Purchase Power (MWh)	Purchase Power Expenses (Dollars)		
	Median	Actual	Average	Actual	Average	Actual	Projected Dry	Most Probable	Average	Actual	Actual	Projected Dry	Most Probable	Actual
Oct 16	1.30	0.20	514.42	381.00	15.01	12.68	248,012	340,536	382,430	384,045	64,165	\$6,704,081	\$1,491,591	\$1,683,280
Nov 16	4.80	2.60	474.23	383.00	14.91	12.31	230,952	315,541	388,155	334,804	127,238	\$7,549,826	\$2,850,078	\$3,213,841
Dec 16	8.10	8.50	362.96	300.00	14.86	11.80	270,310	445,186	437,962	460,079	48,822	\$7,692,571	\$1,292,373	\$1,282,528
Jan 17														
Feb 17														
Mar 17														
Apr 17														
May 17														
Jun 17														
Jul 17														
Aug 17														
Sep 17														
Total							749,275	1,101,262	1,208,547	1,178,928	240,225	\$21,946,477	\$5,634,043	\$6,179,649

Actual generation as a percentage of average: 97.5%

Cost per MWh: \$25.72

Lake/Reservoir Levels

Lake Powell's elevation was 3,600 feet at the end of December, about 100 feet below the maximum reservoir level and about 110 feet above the minimum generation level. The storage volume for Lake Powell was 11,797,000 acre-feet at the end of December, which is about 49 percent of capacity.

Weather and Other Conditions

In December and January, a number of winter storms significantly increased snowpack conditions in the Upper Colorado River Basin. Despite the improved snow conditions, inflow into Lake Powell for water year 2017 is forecasted to be 88 percent of average. However, this is a significant improvement over the December inflow forecast of 72 percent of average.



Desert Southwest Region

	Snowpack (Inches in Snow Water Equivalent)		Lake/Reservoir Inflow (Thousand Acre-Feet)		Lake/Reservoir Content (Million Acre-Feet)		Generation (MWh)				Purchase Power (MWh)	Purchase Power Expenses (Dollars)		
	Median	Actual	Average	Actual	Average	Actual	Projected Dry	Most Probable	Average	Actual	Actual	Projected Dry	Most Probable	Actual
Oct 16	1.30	0.20	60.29	79.00	20.40	11.75	282,630	282,630	378,811	290,888	5,020	\$165,459	\$165,459	\$165,459
Nov 16	4.80	2.60	54.10	78.00	20.31	11.90	345,830	373,020	363,391	374,705	1,919	\$90,031	\$64,805	\$65,277
Dec 16	8.10	8.50	73.53	63.00	20.44	12.31	254,600	268,015	372,094	277,597	13,258	\$388,103	\$289,603	\$510,168
Jan 17														
Feb 17														
Mar 17														
Apr 17														
May 17														
Jun 17														
Jul 17														
Aug 17														
Sep 17														
Total							883,060	923,665	1,114,296	943,191	20,197	\$643,593	\$519,867	\$740,904

Actual generation as a percentage of average: 84.6%

Cost per MWh: \$36.68

Lake/Reservoir Levels

Lake Mead's elevation was 1,081 feet at the end of December, about 139 feet below full storage level and about 31 feet above the minimum generation level. Lake Mead's elevation is forecasted to peak at approximately 1,087 feet in February, and is forecasted to drop to a minimum elevation of approximately 1,072 feet in June.

Weather and Other Conditions

The Desert Southwest Region's hydrology is mostly dependent on the Colorado River Basin snowpack and precipitation above Lake Powell. The water year 2017 precipitation is currently 136 percent of average. This year's snowpack is certainly promising. If the above-average snowpack continues, equalization releases from Lake Powell might be imposed in April 2017 which could possibly provide Lake Mead with an additional 1 to 2 million acre-feet this year.

Rocky Mountain Region

	Snowpack (Inches in Snow Water Equivalent)		Lake/Reservoir Inflow (Thousand Acre-Feet)		Lake/Reservoir Content (Million Acre-Feet)		Generation (MWh)				Purchase Power (MWh)	Purchase Power Expenses (Dollars)		
	Median	Actual	Average	Actual	Average	Actual	Projected	Most	Average	Actual	Actual	Projected	Most	Actual
							Dry	Probable				Dry	Probable	
Oct 16			138.60	177.30	3.85	4.66	93,769	98,500	82,866	90,186	66,326	\$1,918,912	\$1,768,512	\$1,555,677
Nov 16			120.30	145.10	3.85	4.72	57,639	59,762	78,718	56,073	108,411	\$3,104,240	\$3,033,840	\$2,315,705
Dec 16	268.10	160.50	98.80	106.40	3.82	4.69	91,252	93,448	101,061	102,574	76,477	\$2,601,536	\$2,534,336	\$1,998,501
Jan 17														
Feb 17														
Mar 17														
Apr 17														
May 17														
Jun 17														
Jul 17														
Aug 17														
Sep 17														
Total							242,660	251,710	262,645	248,833	251,214	\$7,624,688	\$7,336,688	\$5,869,883

Actual generation as a percentage of average: 94.7%

Cost per MWh: \$23.37

Lake/Reservoir Content

The overall reservoir content at the end of December was 123 percent of average.

Weather and Other Conditions

Drought conditions have improved due to recent winter storms, with merely dry conditions persisting in parts of the Loveland Area Projects (LAP) area. The snowpack has improved significantly and is well above average across the LAP area. October through December reservoir inflows were well above average in the Bighorn River Basin, below average in the Colorado River headwaters, and well below average in the Upper North Platte River Basin. The latest National Weather Service forecast indicates February through April temperatures are just as likely to be above as below normal in the LAP area. The precipitation is more likely to be above normal in the Bighorn River Basin while just as likely to be above as below normal in the North Platte and Colorado River Basins. LAP generation deficits occurred while the Colorado-Big Thompson Project (CBT) was largely unavailable from November through mid-December. No surplus generation is expected until spring, and surpluses are then projected to continue until August when CBT generation will be restricted during a Charles Hansen Feeder Canal siphon repair scheduled from August through mid-November.

Note: The Rocky Mountain Region's (RMR) most recent reported purchase power data are provisional values and may change.



Sierra Nevada Region

	Snowpack (Inches in Snow Water Equivalent)		Lake/Reservoir Inflow (Thousand Acre-Feet)		Lake/Reservoir Content (Million Acre-Feet)		Generation (MWh)				Purchase Power (MWh)	Purchase Power Expenses (Dollars)		
	Median	Actual	Average	Actual	Average	Actual	Projected Dry	Most Probable	Average	Actual	Actual	Projected Dry	Most Probable	Actual
	Oct 16			336.00	561.00	5.26	4.66	121,000	146,000	163,000	100,955	56,052	\$1,179,286	\$1,179,286
Nov 16	4.76	3.00	399.00	706.00	5.21	4.99	104,000	34,000	104,000	42,525	57,080	\$1,139,734	\$1,139,734	\$1,582,259
Dec 16	9.09	6.00	1,046.00	1,621.00	5.72	5.63	79,000	19,000	143,000	115,177	54,748	\$1,179,286	\$1,179,286	\$1,280,611
Jan 17														
Feb 17														
Mar 17														
Apr 17														
May 17														
Jun 17														
Jul 17														
Aug 17														
Sep 17														
Total							304,000	199,000	410,000	258,657	167,880	\$3,498,306	\$3,498,306	\$4,398,934

Actual generation as a percentage of average: 63.1%

Cost per MWh: \$26.20

Lake/Reservoir Content

As of December 31, accumulated inflow for the water year was 213 percent of 15-year average for Trinity, 139 percent for Shasta, 217 percent for Folsom, and 126 percent for New Melones. Reservoir storage as of the same date was 89 percent of the 15-year average for Trinity, 128 percent for Shasta, 100 percent for Folsom, and 49 percent for New Melones. The Folsom and Shasta Reservoirs have both been spilling, with Folsom having spilled during most of the last half of December due to early snowmelt conditions.

Weather and Other Conditions

As of December 31, cumulative precipitation of the Northern Sierra Eight Station Index was at 158 percent of average for the date. The January 1, 2017 forecast for the 50 percent exceedence case is "above normal" as is the 90 percent exceedence case, not reflecting recent storm events.

Note: The Sierra Nevada Region's (SNR) average generation is based upon long-term modeling done for its "Green Book." SNR's projected power expenses are based upon term purchases of 35 to 65 percent of projected power needs, with the difference being left to day-ahead markets after project pumping and generation have been scheduled.



Upper Great Plains Region

	Snowpack (Inches in Snow Water Equivalent)		Lake/Reservoir Inflow (Thousand Acre-Feet)		Lake/Reservoir Content (Million Acre-Feet)		Generation (MWh)				Purchase Power (MWh)	Purchase Power Expenses (Dollars)		
	Median	Actual	Average	Actual	Average	Actual	Projected Dry	Most Probable	Average	Actual	Actual	Projected Dry	Most Probable	Actual
Oct 16	1.20	0.40	8,092.00	5,601.83	55.94	58.67	569,606	558,761	868,861	562,599	146,071	\$4,699,887	\$4,916,797	\$3,414,114
Nov 16	3.80	1.40	7,411.00	5,690.87	54.83	58.32	644,937	573,277	826,177	582,361	160,538	\$4,375,658	\$5,808,858	\$3,233,177
Dec 16	7.10	5.60	6,468.00	5,454.05	54.23	57.60	633,647	636,181	648,170	637,219	*	\$6,822,627	\$6,771,937	*
Jan 17														
Feb 17														
Mar 17														
Apr 17														
May 17														
Jun 17														
Jul 17														
Aug 17														
Sep 17														
Total							1,848,189	1,768,218	2,343,208	1,782,179	306,609	\$15,898,172	\$17,497,592	\$6,647,291

Actual generation as a percentage of average: 76.1%

Cost per MWh: \$21.68

Lake/Reservoir Content

As of January 25, the active conservation pools for the Canyon Ferry and Yellowtail Dams were 75.0 percent and 88.5 percent full, respectively.

Weather and Other Conditions

The January runoff forecast is projecting an average water year for 2017. Snowpack accumulations have increased, with 78 percent of average above Fort Peck and 104 percent of average on the Garrison to Fort Peck reach.

Note: The Upper Great Plains Region (UGPR) reports its 50 percent share of generation from Yellowtail Dam, while RMR reports the snowpack, inflow, content, and remaining share of generation. Asterisks indicate that actual data is not available for the month.